

AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 09/931,309

Atty Docket No.: Q65828

**REMARKS**

The Office Action of June 17, 2004 has been received and its contents carefully considered.

Claims 1, 2 and 4 to 13 are all the claims pending in the application.

Claim 4 has been objected to as being an improper dependent claim because it fails to further limit the subject matter of a previous claim.

The Examiner points out that in claim 4, “ $X^{51}$  and  $X^{52}$  each represents an oxygen atom, a sulfur atom, a selenium atom, a tellurium atom or a nitrogen atom”. The Examiner states that this recitation fails to further limit the scope of Z in claim 1, where Z can be a “thiazole ring, an imidazole ring, a 2-pyridine ring or a 4-pyridine ring”.

In response, applicants submit that claim 4 does further limit the subject matter of claim 1 because claim 1 recites that “D represents a group necessary to form a methine dye”, whereas claim 4 contains a more specific group that contains a five-membered group containing  $X^{52}$  and a  $Y^{52}$  group. This five-membered group containing  $X^{52}$  and the  $Y^{52}$  group of claim 4 further limits the subject matter of claim 1. Applicants point that a dependent claim does not have to limit every recitation that appears in a claim from which it depends.

The Examiner further states that the scope of  $X^{51}$  extends beyond the scope of the ring containing Z in claim 1. The Examiner points out that in claim 4,  $X^{51}$  can be a sulfur atom, a selenium atom or a tellurium atom.

In response, applicants have amended claim 4 to delete tellurium from the definitions of  $X^{51}$ .

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In addition, in reviewing claim 1, applicants realize that it contained an error in omitting a selanazole ring from the definition of the ring formed by Z. Applicants have amended claim 1 to correct this error.

In view of the above, applicants submit that claim 4 is a proper dependent claim and, accordingly, request withdrawal of this objection.

Claims 1, 2, 4 and 5 have been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,057,406 to Usagawa et al in view of the newly cited "The Theory of the Photographic Process", Fourth Edition, T.H. James, 1989.

Applicants first note that the Examiner continues to refer to column 35 of Usagawa et al. As applicants pointed out previously, this appears to be in error, and the Examiner apparently intended to refer to compound (35), at column 11 of Usagawa et al. Applicants request the Examiner to clarify the record on this point.

In this rejection, the Examiner recognizes that Usagawa et al do not disclose that Z represents the rings recited in claim 1, and do not disclose the X<sup>51</sup> and X<sup>52</sup> recitations of claim 4.

The Examiner argues that in view of Table 8.3 of the newly cited James publication, it would have been obvious to employ an oxazole ring or a thiazole ring, instead of the pyrrole ring disclosed in compound (35) of Usagawa et al.

Table 8.3 of James discloses various cyanine dyes comprised of a 6-membered benzene ring condensed to a 5-membered ring which can be an oxazole ring, a thiazole ring or a pyrrole

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ring. The Examiner therefore concludes that it would have been obvious to employ an oxazole ring or a thiazole ring instead of the pyrrole ring in compound (35) of Usagawa et al.

In response, applicants point out that the present invention is characterized in that a specific azole ring (or a pyridine ring, etc.) in the methine dye is condensed with a specific hereto ring, such as a furan ring as recited in claim 1. There is no disclosure or suggestion with regard to this characteristic in James.

James does not disclose a furan ring condensed with a 5-membered or 6-membered ring. Accordingly, applicants submit that the teachings of James are not relevant to the present claims.

Usagawa et al disclose a dye where a hereto ring is condensed with a ring where X<sup>51</sup> or X<sup>52</sup> represents a dimethylmethylene group, but Usagawa et al do not disclose or suggest an oxazole ring or a thiazole ring, or any of the other rings covered by the present claims.

Further, applicants submit that one of ordinary skill would not have been led to combining the teachings of James with those of Usagawa et al because there is no motivation to do so.

With respect to claim 2, applicants submit that Usagawa et al do not satisfy the recitations of claim 2. Claim 2 requires that Y be selected from Y-1 to Y-26 of claim 2. Applicants submit that there is no disclosure in Usagawa et al of compounds that satisfy Y-1 to Y-26 of claim 2. The Examiner has not identified any compound in Usagawa et al that satisfies the recitations of claim 2. Further, James is not relevant to the present invention because it does not disclose any of Y-1 to Y-26.

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With respect to claim 4, compound (35) of Usagawa et al do not satisfy formula (XX) of claim 4, since compound (35) contains a carbon atom in a position corresponding to X<sup>51</sup> and X<sup>52</sup>. The Examiner has not addressed this argument. Further, James does not disclose a furan ring condensed with a 5-membered ring as in formula (XX).

With respect to claim 5, the Examiner relies on compounds (31) to (34) of Usagawa et al, at columns 11 and 12.

In the Amendment Under 37 C.F.R. § 1.116 filed on March 30, 2004, applicants argued that claim 5 requires that the thiophene ring be substituted with at least one halogen atom, but that the compounds (31) to (34) of Usagawa et al do not contain a halogen atom on a thiophene. Applicants also argued that n<sup>61</sup> in formula (XXX) of claim 5 represents 0 or 1, whereas compounds (31) to (35) of Usagawa et al correspond to the case where n<sup>61</sup> represents 3.

In the present Office Action, the Examiner does not set forth any comments in response to these arguments.

Applicants continue to rely on these arguments. Further, James does not disclose a thiophene ring condensed with a five membered ring as in formula (XXX) of claim 5.

The Examiner broadly states that closely related homologs, analogs, isomers may create a *prima facie* case of obviousness. This statement of the Examiner, however, is insufficient to provide a basis for an obviousness rejection.

In view of the above, applicants submit that Usagawa et al and James do not disclose or render obvious the subject matter of claims 1, 2, 4 and 5 and, accordingly, request withdrawal of this rejection.

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Claims 1, 2, 4, 5 and 11-13 have been rejected under 35 U.S.C. § 103(a) as obvious JP 2000-63690.

The Examiner relies on compound D-38, at columns 36 to 37, and on dyes D-1 to D-146 at columns 21 to 76 for dyes that contain a thiophene ring.

The Examiner asserts that the compounds of formula (II) in JP '690 contains a Y<sup>2</sup> that can be O, S, Se, N or C, and a Q which is a group of non-metallic atoms necessary to form a benzene ring having a heterocyclic ring fused thereto, and that A<sup>2</sup> in JP '690 is a group necessary for forming a methine pigment.

The Examiner recognizes that JP '690 does not disclose the dyes of the present invention, but makes the statement that they are substantially similar to those set forth in the present claims.

The Examiner states that JP '690 does not exemplify a furan group of claim 1, or a pyrrole ring of claim 11, but asserts that the furan group is within the scope of a group of non-metallic atoms necessary to form a benzene ring having a heterocyclic ring fused thereto, as disclosed in JP '690, and further asserts that the oxygen atom (of the furan group) or the nitrogen atom (of the pyrrole group) belong to the same column of the periodic Table of Chemical Elements.

The Examiner argues that one of ordinary skill in the art would have expected that a methine dye of similar properties could be formed with the above substitutions.

The Examiner asserts that the condensed groups in claim 2 are within the scope of generic formula (II) in JP '690, where Y<sup>2</sup> are each O, S, Se, N or C, and Q is a heterocyclic compound such as the thiophene group exemplified therein.

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The Examiner asserts that a prima facie case of obviousness can be made when chemical compounds have very close structural similarity and similar utilities.

With respect to claim 5, applicants have previously argued in the Amendment Under 37 C.F.R. § 1.116 filed on March 30, 2004 that the compound D-35 of JP '690 is a pentamethine dye and is, therefore, different from the compounds of claim 5 where  $n^{61}$  represents 0 or 1. The Examiner has not responded to this argument.

Further, with respect to the Examiner's general comments that it would have been obvious to make the substitutions necessary to arrive at the present application, applicants submit that the Examiner has not provided sound reasons why the invention is obvious, but has made a general statement which is not supported by the applicable law. The Examiner must provide specific reasons and evidence to show obviousness, and he has not done so in the present case.

Accordingly, applicants submit that JP '690 does not disclose or render obvious the subject matter of claims 5 to 9 and, therefore, request withdrawal of this rejection.

Claims 5 to 9 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '250 or JP '950 in view of either Parton et al or Hioki et al.

The Examiner recognizes that JP '250 and JP '950 do not disclose a compound in which a nucleus connected to the thiophene contains an oxygen atom, a sulfur atom, a selenium atom, a nitrogen atom or a carbon atom, but relies on Parton et al and Hioki et al to show nuclei containing such atoms.

In the Amendment Under 37 C.F.R. § 1.116 filed on March 30, 2004, applicants argued that the Hioki et al patent is not relevant to the present claims because none of the nuclei

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disclosed in Hioki et al contains a thiophene condensed with a 5-membered nitrogen containing ring. Applicants similarly argued that none of the various nuclei disclosed in Parton et al are condensed with a thiophene ring as required in claim 5.

Applicants maintain these arguments.

In view of the above, applicants submit that claims 5 to 9 are patentable over the cited references and, accordingly, request withdrawal of this rejection.

In Paragraph 7 of the Office Action, the Examiner states that a thiophene group and a heterocyclic group have been known to be associated with a methine group to form a methine dye, such as in JP '690, JP '250 or JP '950. The Examiner asserts that it would be expected for one of ordinary skill in the art that a pyrrole group or a furan group is equivalent to a thiophene group or other heterocyclic group containing chemical elements from similar groups from the Periodic Table. The Examiner asserts that the claimed dyes would have been *prima facie* obvious in the absence of criticality of furan, pyrrole or thiophene and the substituents associated herewith.

In response, applicants submit that the Examiner has not provided any evidence to support his assertions. Applicants submit that the Examiner's assertions are mere speculation. The Examiner has not cited any prior art to support his assertion that it would be expected in the context of the present invention that a pyrrole group or a furan group is equivalent to a thiophene group or other heterocyclic group. Further, no showing of criticality is necessary when a *prima facie* case of obviousness does not exist. The Examiner has not provided any motivation to make the substitutions he suggests.

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In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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